

Defense Authorization Recommendations

The following project requests were submitted to the Senate Armed Services Committee for consideration as part of the 2010 National Defense Authorization Act:

Crane Naval Surface Warfare Center (Crane, IN) is seeking \$13,710,000 to construct a permanent addition to the existing Strategic Weapons Systems Engineering Facility. The project supports the mission requirements for engineering and technical functions of the electronics components of the Navigation, Fire Control, and Guidance systems for the Life Extension of the Trident D5 strategic missile systems.

Benefit: The execution of current and expanding mission requirements requires properly configured, co-located, and classified facilities. New construction has the lowest life-cycle cost among the viable alternatives evaluated by the Department of Defense. Savings are calculated at \$59,894,552, with a payback period of 4.1 years. Not constructing this project will adversely impact Fleet Ballistic Missile Systems readiness and DOD strategic deterrence and strike capabilities.

Crane Naval Surface Warfare Center (Crane, IN) is seeking \$18,860,000 to construct a Platform Protection Engineering Complex. Construction includes an addition to the existing Electro-Optics Facility, a tunnel for indoor testing, and enhancements to an existing EO-IR-Laser Proving Range for outdoor testing. It also includes the construction of a building for administrative offices and training. This will allow the vacated space to be converted back to a heated warehouse to meet storage requirements associated with the Platform Protection Mission. The project also provides for renovations to support the non-laser Electro-Optic/Security Sensor workload that is not required to be co-located with the primary EO Facility.

Benefit: This project provides an engineering laboratory test and storage facilities for the rapid evaluation and deployment of Electro-Optic and other imaging and targeting devices. Adequate facilities are required for the rapid reaction design, build and testing of various critical electro-optic imaging devices. New construction has the lowest life-cycle cost among the viable alternatives as evaluated by the Department of Defense. Savings are calculated at \$56,645,974, with a payback period of 5.5 years.

Purdue University (West Lafayette, IN) is seeking \$5,000,000 to develop a Digital Warfighter Simulator (DWS) as a tool with which the DOD can design new equipment for personnel protection. The DWS would be used to improve the cooperative development of biomedical imaging and genetic marker methods to assess the predisposition of servicemembers to possible traumas.

Benefit: Brain trauma is the signature injury of the current conflict in Iraq. An estimated 1.4 million Americans suffer Traumatic Brain Injury (TBI) each year through non-military causes, such as automobile accidents or sports injuries. These incidents leave

more than 235,000 hospitalized and 50,000 dead. Previous research has focused either on the development of improved protective devices or on the biological, chemical, and mechanical outcomes of brain trauma. This work will give doctors and engineers a better understanding of the effects of TBI, enabling improvements in engineering and medical diagnostic tools. It will also assist in better designing more cost-effective protective systems for soldiers, as well as treatment options for civilian medicine to include pharmacological treatments and advanced molecular therapies.

Indiana University (Bloomington, IN) is seeking \$1,170,000 to construct an advanced linear accelerator (LINAC) facility to address defense radiation effects test requirements. The Advanced LINAC Facility will help ensure the survivability and reliability of space and missile systems in the radiation environment encountered in space under a variety of natural and manmade conditions.

Benefit: The Advanced LINAC Facility (ALF) tests the effects of radiation on critical Department of Defense and national security systems and enables proper protection of U.S. resources. ALF will make important contributions to the study of energy-related problems. The facility will provide unique capabilities to study new technologies addressing solar and biofuel energy generation, energy storage, and energy systems.

Rose-Hulman Institute of Technology (Terre Haute, IN) is seeking \$5,500,000 to build a prototype all-optical-digital RF beamformer to process multiple radar, communication, target tracking, and imaging beams for Navy's broadband active phased-array antennas.

Benefit: The goal of this technology is to vastly cut the number of antennae needed on navy ships. Limitations on the quality, capacity, and coverage Electronic Warfare antenna systems are a national security vulnerability. Photonic Digital Radar reduces the size of communication systems and increases the performances of the radars by taking advantage of new technology and solid-state active electronically scanned arrays.

Indiana University-Purdue University Indianapolis (Indianapolis, IN) is seeking \$1,600,000 to develop monitoring techniques and battery management systems that will allow early detection and control of impending failures in lithium-ion batteries.

Benefit: The DoD needs to incorporate newer technologies into military systems that provide performance and cost advantages over what is currently in use. Adoption of lithium-ion batteries offers significant weight, size, life and cost advantages in military and commercial Hybrid Electric Vehicles (HEVs) and Plug-in HEVs (PHEVs) as well as aboard submarines and other military platforms. Solving lithium-ion battery safety concerns is a key enabler for more use of HEVs and PHEVs, which can substantially reduce military fuel logistics requirements and vehicle emissions. As lithium-ion battery technology gains widespread commercial application, procurement costs for military variants will be substantially reduced.

Indiana University (Bloomington, IN) is seeking \$3,000,000 to develop Sensor Grids technology to advance DoD's Global Information Grid as required by the Air Force's Focused Long Term Challenges (FLTC) plans.

Benefit: The Global Information Grid (GIG) is used by the Department of Defense as an Internet or Intranet supporting command and control for the U.S. defense operations. The GIG links together commanders, warfighters, computers, data repositories, and sensors delivering real-time information. With this project, we will extend our existing Sensor Internet systems to include innovative security and new commercial cloud computing capabilities.

Rolls Royce and General Electric are seeking \$463,000,000 to continue the systems design and development of the F136 alternate Joint Strike Fighter engine in Indianapolis, IN.

Benefit: The F-35 Joint Strike Fighter (JSF) is the next-generation, multirole fighter aircraft. It will serve the needs of the Air Force, Navy and Marine Corps. The JSF will eventually make up a significant portion of the U.S. fighter fleet. Providing funding for two competing engines reduces operational risk and life-cycle costs, and improves performance. Congress mandated the development and production of a competing engine as result of the issues surrounding the single source engine for the F-14, F-15 and F-16. Having two engine sources for the JSF retains the industrial base for combat engines and will enhance contractor responsiveness.

Rolls Royce and General Electric are seeking \$130,000,000 for the advance procurement of parts to continue the systems design and development of the F136 alternate Joint Strike Fighter engine in Indianapolis, IN.

Benefit: The F-35 Joint Strike Fighter (JSF) is the next-generation, multirole fighter aircraft. It will serve the needs of the Air Force, Navy and Marine Corps. The JSF will eventually make up a significant portion of the U.S. fighter fleet. Providing funding for two competing engines reduces operational risk and life-cycle costs, and improves performance. Congress mandated the development and production of a competing engine as result of the issues surrounding the single source engine for the F-14, F-15 and F-16. Having two engine sources for the JSF retains the industrial base for combat engines and will enhance contractor responsiveness.